

**Alaskan Copper
Dangerous Waste Tank Closure Plan**

**Tank System Clean Closure Corrective Action
Plan
Sampling Summary**

Prepared by



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On August 19th 2009 Clean Harbors Environmental Services provided a sampling service for Alaskan Copper at 3600 East Marginal Way in Seattle Washington. This service was performed per the Alaskan Copper Dangerous Waste Tank Closure Plan. Three different sampling methods were used in gathering the various samples as outlined in the plan.

1. **Subsurface Samples**: All sub surface samples, BG-1, TP-1, TP-2, TP-3, and TPNW-1 were collected using a sampling auger. The construction of the unit was constructed of stainless steel and was washed with a mild detergent and rinsed with DI water after each sample was collected.
2. **Rinse Samples**: The rinse sample collected from the exterior of the tank, TER-1, was collected directly in to the sample container off of the surface of the tank. The rinse samples from the interior of the tank, TIR-1, and the interior of the tank pit, TPR-1, were collected using a dipper in accordance with The Alaskan Copper Dangerous Waste Closure Plan section 4.3 of the Sampling and Analysis Plan.
3. **Chip Samples**: All sub surface samples, TPFC-1, TPWC-1, and TPBC-1, were collected using a stainless steel chisel. The chips were all collected and placed in to clean sample containers. The areas of the samples were extracted from the top 2 cm of a 10 cm X 10 CM area.

In all sampling events clean nitrile gloves were donned prior to handling each sample. Samples were place into new sample containers provided by Test America specifically for this project. All samples collected were labeled with:

1. Type of analysis
2. Name of The facility
3. Monitoring Point Identification
4. Name of the person collecting the sample
5. Time and Date the sample was collected
6. If used the preservative

All collected samples were sealed with Teflon tape and place in an ice chest containing ice.

The samples were taken to Test America in Tacoma Washington for the following analysis

Analysis	Test Method
Total Metals (arsenic, barium, cadmium, lead, mercury, selenium, silver, copper, zinc)	EPA 6010 / 7470A
Chrome IV	EPA 7199
Total Fluoride	EPA 300.0
Total Chloride	EPA 300.0
Total Nitrates	EPA 300.0
PH (50% water added to solid samples)	EPA 9045D

Analysis Summary
See Attachments 1,2, and 3

Sampling Locations
See figures 2 and 3

Sub Surface Samples

Sample ID	Matrix	Sampling	Hexavalent												
		Depth	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Copper	Zinc	Chrome	Mercury	Fluoride	
BG-1	Solid	6"	10	31	ND	20	5.7	12	ND	24	41	0.57	ND	2.5	
	Solid	30"	ND	43	ND	55	2.6	14	ND	33	46	1	ND	27	
	Duplicate	Solid	30"	ND	36	ND	190	1.8	14	ND	34	24	12	ND	12
	Duplicate	Solid	39"	3.7	35	ND	510	33	20	ND	290	53	11	ND	68
TP-1	Solid	12"	94	48	ND	990	8.4	42	ND	46	52	2.1	0.032	1100	
	Solid	20"	74	42	ND	730	6.1	35	ND	16	28	2	0.023	1600	
	Duplicate	Solid	20"	72	41	ND	750	6	34	ND	14	1.9	ND	1500	
	Duplicate	Solid	36"	210	28	ND	750	21	35	ND	12	18	2	0.039	910
	Duplicate	Solid	74"	6.2	21	ND	240	3.8	12	ND	38	84	1.6	ND	310
TP-2	Solid	9"	6.6	61	ND	52	300	17	ND	230	480	5.9	ND	100	
	Solid	15"	4.6	110	0.67	20	180	8.5	ND	460	420	0.33	0.095	10	
	Duplicate	Solid	15"	8.7	140	0.71	16	130	6.5	ND	410	350	ND	0.073	9.5
	Duplicate	Solid	36"	ND	28	ND	75	11	9.5	ND	83	120	4.9	0.03	150
TP-3	Solid	6"	6.8	34	ND	100	63	11	ND	190	150	7.1	ND	55	
	Duplicate	Solid	6"	7.3	45	ND	40	32	ND	130	140	5.9	ND	49	
	Duplicate	Solid	12"	5.7	130	ND	720	220	18	ND	330	160	0.11	74	
	Duplicate	Solid	36"	ND	42	ND	170	110	10	ND	270	65	2.9	0.25	14
TPNW-1	Solid	Surface	680	50	ND	2500	15	190	ND	18	45	8.2	0.2	880	

Indicates Duplicate Samples
 Indicates Above Clean Up Levels

[Redacted]

Nitrates	Chlorides	PH
0.62	5.5	9.09
12	6.8	5.23
8.5	4.8	6.64
3.6	6.8	7.98

82	7.3	6.67
40	ND	5.78
43	ND	5.98
12	ND	4.61
32	6.6	4.86

100	5.2	9.45
530	4.4	5.38
540	4.3	4.83
93	ND	5.85

68	3.7	8.11
55	ND	8.33
44	3.8	8.29
7.7	4.6	5.65

340	ND	3.37
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Rinse Samples

Sample ID	Matrix	Sampling Depth	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Copper	Zinc	Hexavalent Chrome	Mercury	Fluoride
TIR-1	Liquid	Rinse Sample	ND	0.26	ND	46	1.2	0.15	ND	2.4	37	28	0.0015	1600
TIR-1	Liquid	Duplicate	ND	0.22	ND	26	0.84	ND	ND	1.6	21	17	0.0007	480
TER-1	Liquid	Rinse Sample	ND	0.028	ND	5.5	0.078	ND	ND	0.29	3.6	1.8	0.001	2000
TPR-1	Liquid	Rinse Sample	ND	0.28	ND	18	0.46	13	ND	1.8	11	21	0.00041	740

Indicates Duplicate Samples
 Indicates Above Clean Up Levels

[Redacted]

Nitrates	Chlorides	PH
950	4.6	1.9
400	4.3	3.33

200	2.9	3.47
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440	4.2	2.75
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Chip Samples

Sample ID	Matrix	Sampling		Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Copper	Zinc	Hexavalent	
		Depth											Chrome	Mercury
TPFC-1	Solid	Chip Sample	mg/kg	200	88	ND	2300	40	120	ND	100	370	45	0.024
Duplicate	Solid	Chip Sample	mg/kg	290	87	0.84	4300	31	260	ND	49	300	74	0.025
TPWC-1	Solid	Chip Sample	mg/kg	81	60	ND	740	30	27	ND	52	210	200	ND
TPBC-1	Solid	Chip Sample	mg/kg	11	10	ND	4.2	5.1	5.7	ND	8.4	28	ND	ND

Indicates Duplicate Samples
 Indicates Above Clean Up Levels

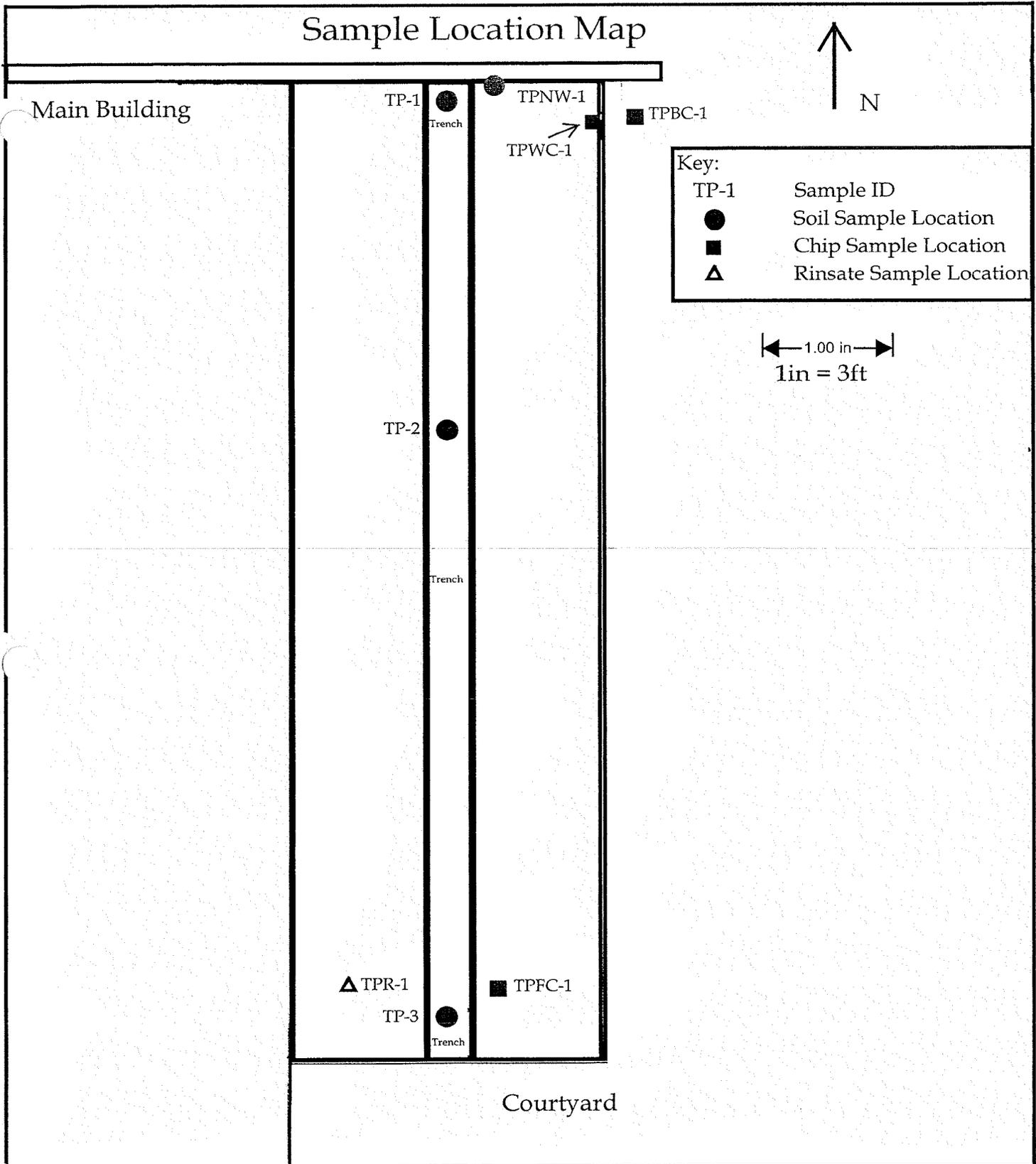
[Redacted]

Fluoride	Nitrates	Chlorides	PH
2800	2200	5.4	3.3
1100	1900	25	3.06

3100	5400	43	2.83
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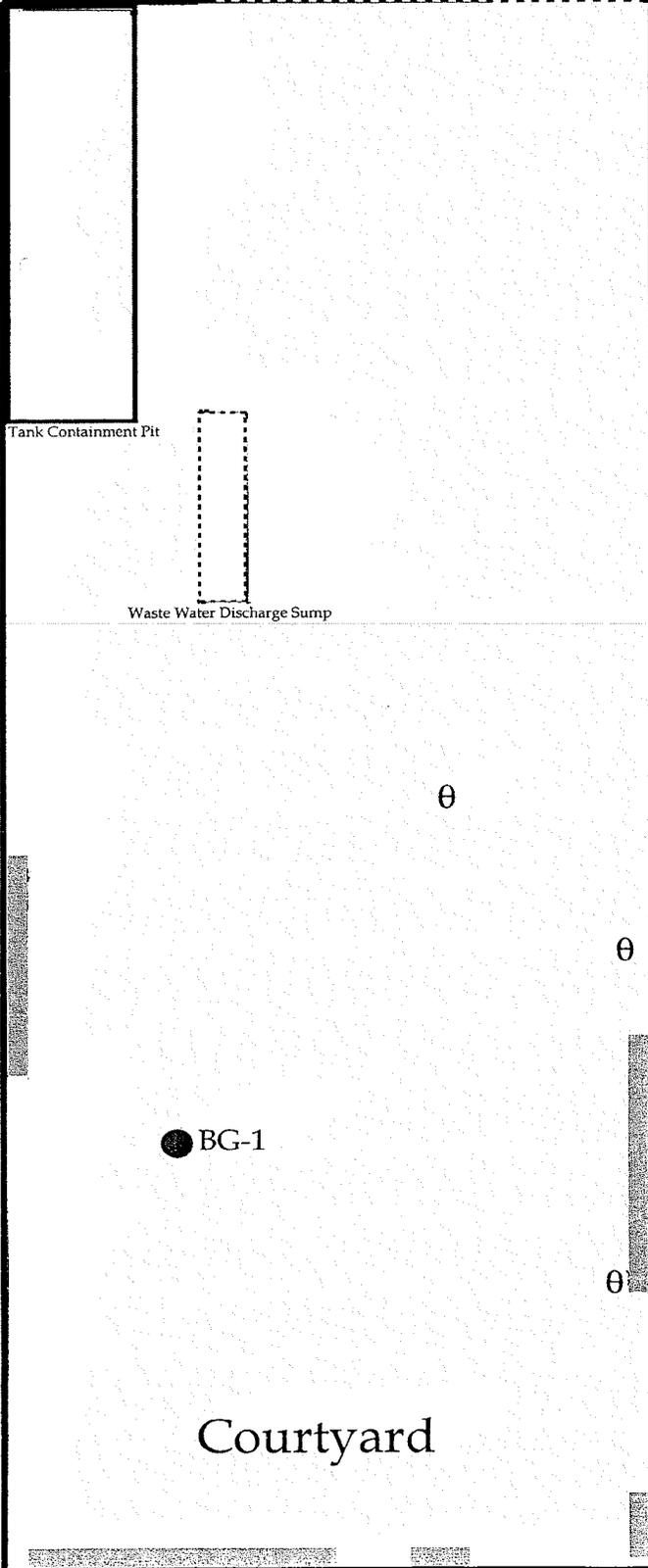
94	68	ND	11.8
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Sample Location Map



	Passification Tank Containment Pit Alaskan Copper Works 3600 E Marginal Way S Seattle WA, 98134		Date: 9/7/09
	G72435731	Version: 1	Prepared By: RJR Figure 3

Site Map



Key:

- BG-1 Sample ID
- Sample Location
- θ Floor Drain
- Fence
- ▬ Doorways

← 1.00 in →
1 in = 10ft

Courtyard

Main building



Site Location Map
Alaskan Copper Works
3600 E Marginal Way S
Seattle WA 98134

	Date: 9/7/09
Version: 1	Prepared by: RJR
G72435731	Figure 2